Julius Jeffreys, late of the Hon. East India Company's Medical Establishment."

The inner surfaces of a flue built of siliceous bricks appeared to be deeply eroded by the passage over it of steam at a very high temperature, and fragments of siliceous materials laid in the course of the current were partially consumed. A siliceous crust was deposited on several vessels of stone ware, coated with a micaceous glaze, placed in the upper part of the furnace, and this crust was re-dissolved when the vessels were removed to a hotter situation in the same furnace. The author notices the experiments of Dr. Turner and others, which failed in showing the solubility of silica by steam, in consequence, as he conceives, of the heat having not been sufficiently great to effect the solution.

June 4, 1840.

The MARQUIS of NORTHAMPTON, President, in the Chair.

Justus Liebig, Johannes Müller, and Jacques Charles François Sturm, were severally elected Foreign Members of the Society.

The Right Rev. the Lord Bishop of Norwich, Lieut. Thomas Cook, R.N., and William Hutton, Esq., were balloted for, and duly elected into the Society.

A paper was read, entitled, "Contributions to the Chemical History of Archil and of Litmus." By Robert Kane, M.D., M.R.I.A. Communicated by Francis Baily, Esq., V.P.R.S.

After a preliminary sketch of the labours of Heeren and of Robiquet in investigating the origin of the beautiful colouring materials termed *Archil* and *Litmus*, obtained from different kinds of colourless lichens, and their detection of the two proximate principles termed *erythrine* and *orceine*, the author states the object of the inquiries detailed in the present paper to be threefold; viz. first, to ascertain the primitive form of the colour-making substance in a given species of lichen, and trace the stages through which it passes before the coloured substance is developed; secondly, to determine the nature of the various colouring substances which exist in the archil of commerce; and thirdly, to examine the colouring materials of ordinary litmus. He finds in the lichen *Roccella tinctoria* the following bodies, either pre-existing in the plant, or formed during the processes employed for its analysis: 1. Erythryline; 2. Erythrine (the Pseudo-erythrine of Heeren); 3. Erythrine bitter; 4. Telerythrine; and 5. Roccelline (the Roccellic acid of Heeren). The properties and constitution of these substances are then described, and the chemical formulæ given, which are deducible from their respective analyses. The author finds the archil of commerce to consist essentially of three ingredients, namely, orceine, erythroleic acid, and azoerythrine; of each of the two former there exist two modifications,

and there is, in addition, a yellow matter. After comparing his results with those obtained by Heeren, by an examination of the products evolved by his erythrine in contact with air and with ammonia, and stating reasons for some changes in nomenclature, the author gives the chemical formulæ resulting from his own analysis of these different substances.

His inquiries into the constitution of ordinary litmus, which form the last division of his subject, lead him to the conclusion that that substance contains the principles designated by him as Erythrolein, Erythrolitmine, Azolitmine, and Spaniolitmine; and that the colouring constituents of litmus are, in their natural condition, red; the blue substances being produced by combination with a base, which bases in that of commerce are lime, potass, and ammonia; and there is mixed up in the mass a considerable quantity of chalk and sand. The details of the analyses of these several substances, and the resulting chemical formulæ representing their constitution, are then given.

The concluding section of the paper is occupied by an inquiry into the decoloration of the bodies which exist in archil and in litmus. The latter of these, the author concludes, is reddened by acids, in consequence of their removing the loosely combined ammonia by which the blue colour is produced; and the so-called hydrogen acids liberate the colouring matter by their combining with the alkali to form bodies (either chlorides or iodides), with which the colouring matter has no tendency to unite. Hence it appears that the reddening of litmus is no proof that chloride of hydrogen is an acid, and that the double decomposition which occurs is the same in principle, whether hydrogen or a fixed metal come into play. After detailing the blanching effects of other deoxydizing agents on the colouring matter of litmus, and the action of chlorine on orceine and azolitmine, the author remarks, that in these actions chlorine is subjected to conditions different from those which determine the nature of the results with the generality of organic bodies, and that the displacement of hydrogen, so marked in other cases, does not exist in the class of substances under consideration; but that, in reality, the products of the bleaching energy of chlorine resemble in constitution the compounds of chlorine which possess bleaching powers.

A paper was also read, entitled, "On the Corpuscles of the Blood." By Martin Barry, M.D., F.R.S.

The author in the course of his researches in Embryology, detailed in his "third series," observed that some of the corpuscles of the blood undergo progressive alterations in their structure. The corpuscles so altered he believes to be of the same kind as those described by Professor Owen; and having found that the alterations in question terminate in a separation of the corpuscles into globules, he thinks this fact confirms the idea of Professor Owen—that the blood-disc undergoes spontaneous subdivision. The author farther observed that the corpuscles of the blood, in certain altered states, undergo rapid and incessant changes of form, which cannot be traced